ACTIVITIES OF THE RODENT BRANCH OF THE EUROPEAN AND MEDITERRANEAN PLANT PROTECTION ORGANIZATION (EPPO)

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ABSTRACT: The European and Mediterranean Plant Protection Organization (EPPO/OEPP) is a regional, governmental body, which has 33 member countries in Europe, North Africa, and Middle East. Its former activities were mainly concentrated on phytosanitary problems, but recently more attention has been paid on coordinating research activities and, especially, on problems associated with the use of pesticides in plant protection. On the Rodent Branch EPPO has at present three working units:

1. The Working Group on Field Rodents, concentrated primarily on biological aspects of the control of Microtines and other injurious rodents causing damage on field crops, horticulture, and forestry.

2. The Rodenticide Panel, which simultaneously with other expert panels of the Working Party on Pesticides in Plant Protection, has the development of standard methods for rodenticide tests as its main task.

3. A Working Party for Muskrat Problems. As one of its main initiatives the Working Group on Field Rodents has started a critical mapping out of the economic importance as well as geographical and ecological range of the most prominent rodent problems in the member countries.

EPPO AND HOW IT WORKS

The "Convention for the Establishment of the European Plant Protection Organization" (EPPO/OEPP) was signed by representatives of 15 European countries in April 18, 1951 [1]. At present the total of EPPO member countries is 33, including nearly all countries in Europe and some in North Africa and the Middle East. EPPO is a regional and governmental coordinating body in plant protection and as such is the regional Organization recognized by the Food and Agriculture Organization (FAO) of the United Nations according to the International FAO Plant Protection Convention of 1951. However, organizationally EPPO is independent of FAO, or any other International or European organization; e.g., there are some important members of EPPO, like the USSR, which are not members of FAO.

EPPO was born "under the sign of the Colorado beetle"[1]. During the first two decades its activities were mainly focused on phytosanitary problems such as plant quarantine measures necessary to prevent introduction and spread of plant diseases and pests, documentation service, exchange of information on national legislation, etc. To implement these tasks EPPO has established working parties, organized large technical conferences, and kept the member governments informed through a reporting service. The obvious antagonism between the demands for more stringent phytosanitary regulations and for public awareness of side effects resulting from the use of plant protection chemicals, as well as the importance of observing good agricultural practices, has recently caused EPPO to pay increasing attention to pesticide problems. One of the visible consequences has been the establishment of a Working Party on Pesticides in Plant Protection with expert panels.

EPPO CONFERENCES ON RODENT PROBLEMS

In the Rodent Branch the most prominent events prior to the 1970's were the three general conferences arranged by EPPO. In the first one -- International Conference on Harmful Mammals and their Control, London 1958[2], attention was devoted to diverse problems and methodological questions associated with injurious rodents and rabbits, such as control of the voles (Microtus) with chlorinated hydrocarbons, forecasting rodent outbreaks, control of squirrels, and myxomatosis. Probably the most important theme was a discussion on methods for assessing anticoagulant efficacy.

The second meeting -- International Conference on Rodents and Rodenticides, Paris 1965[3], concentrated on three topics: (a) anticoagulant resistance; (b) the idea of rat-free towns; and (c) problems regarding the control of the common vole (Microtus arvalis).

The latter, however, was limited to discussion based on France's experience with voles. This was the first time both of the above themes concerning rat control were thoroughly discussed at an international plenum. In fact, only a few new viewpoints have been presented on this subject at numerous international meetings held since then.

The third EPPO Conference on Rodent Problems -- "International Conference on Rodents: Microtus arvicola and Other Rodents Affecting Agriculture and Forestry," was held in Autumn 1969 in Otaniemi, near Helsinki, Finland[4]. The main emphasis was paid on field rodents, especially on problems totally neglected at earlier conferences, such as the huge problems caused by Microtus agrestis to horticulture and forestry in the Scandinavian countries, the difficulties of controlling subterranean species like Arvicola, Pitymus, and Spalax, etc. In the final resolution that conference emphasized that the most urgent objective of future research should be the following four points:

1. The estimation of losses in agriculture and forestry due to rodents.

2. Finding ways of assessing populations that can be standardized so that economic thresholds may be established and the efficacy of treatments measured.

3. Gaining an understanding of the factors governing population fluctuations and setting up national and international forecasting systems of possible outbreaks.

4. Ensuring that the methods of control applied do not present hazards to man and his environment.

FOUNDATION AND FIRST ACTIVITIES OF THE WORKING GROUP ON FIELD RODENTS

The resolution was based on some concrete proposals, with the aim of intensifying research on the economically most important species. It was strongly emphasized that a stricter international coordination was necessary to ensure an adequate partitioning of research and to avoid undue overlap. The need for the development of generally accepted standard methods for the surveillance of rodent populations in the field as well as the biological evaluation of control measures was stressed. To this end it was decided to set up a special working unit, the EPPO Working Group on Field Rodents. The main objectives of this group are expressed in the terms of reference, as agreed upon at the Warsaw Meeting, November 1973[5].

1. To map out critically the geographical distribution, ecological conditions, and economic value of the damage done by the major rodent pests on field crops, horticulture, and forestry in the EPPO member countries.

2. To develop objective methods of estimating economic losses.

3. To develop methods of keeping rodent populations under surveillance and of predicting outbreaks.

4. To gather information on the different control methods practiced and on the relative efficacy of those methods when employed in different conditions.

5. To coordinate investigations of the ecological basis for control of field rodents and of monitoring the changes in ecosystems that may occur as a result of control programs, including the response of rodents to control measures such as development of resistance to rodenticides.

6. To compile a comprehensive directory of institutions and scientists in all of the member countries that are directly concerned with work on economically important field rodents and to promote the exchange of information by arranging expert group meetings, reporting service, and larger conferences.

For the mapping out of the prevailing problems a questionnaire was dispatched to the EPPO member countries. On the basis of the responses received it appears that the main problems are as follows:

1. Damage by the common vole, Microtus arvalis, to field crops. This problem is universal in most of the European countries, except British Isles and some of the Scandinavian and Mediterranean countries. The extent of the problem is illustrated, e.g., by the situation in Hungary in 1965, the year of the last catastrophic

outbreak. At that time 2-1/2 million people were mobilized for the control of the field vole, and more than one third of the total acreage was treated with poisoned baits.

2. Damage caused mainly by the field vole, Microtus agrestis, to fruit trees, ornamental plants, and, especially to forest trees in the Scandinavian countries, Germany, and elsewhere. An essential part of this type of damage is done under the snow cover during the winter. A summary of the recorded damage in Scandinavia prior to 1969 was given by Kanervo and Myllymaki, 1970[6].

3. Subterranean, or seasonally subterranean rodents like Arvicola terrestris, several species of Pitymus, etc., are also a major problem in many European countries. The type of damage is variable: Arvicola is predominantly damaging roots of fruit and forest trees while the damage caused by Pitymus spp. is more often on field crops, especially commercially valuable vegetables.

4. Steppe rodents, like hamsters (Cricetus) and ground squirrels (Citellus spp.), are a problem to countries on the lower Danube and in Southern Russia, where they are very important pests.

According to the policy of EPPO it is highly desirable to gather more detailed and quantified information of the real extent of these major problems than those obtained only by means of simple questionnaires. At present a lot of published information exists, but it is scattered and often published in national languages and, consequently, not easily available. In order to facilitate the collection of this material EPPO has already instigated methods of achieving this goal.

On a national basis some model papers have already been prepared, e.g., a critical review of the existing information on damage caused by the field vole since World War II in Finland. These models are sent to the national contributors in order to facilitate their efforts and to standardize the approach. Special attention is paid to the sources and degree of reliability of the information, so that the confidence limits, e.g., the monetary value of damage can be roughly estimated. The reports are requested personally from known scientists, and at the beginning for six rodent species or species groups, (Microtus arvalis, M. agrestis, Clethrionomys glareolus, Arvicola terrestris, Pitymus spp., and Cricetus cricetus). For each species there is a coordinator who, together with the general coordinator (Chairman of the Working Group), compiles the final report. We are confident that this mapping out will be finished before the next general conference which is to be held in 1975.

As far as the other objectives listed above are concerned, some progress can also be expected in the near future. It is expected that new ideas on how to estimate rodent damage will appear in connection with the mapping activities. Investigations for developing more advanced forecasting methods than those used today are under way in several countries (France, Hungary, the Scandinavian countries, etc.). In connection with the First Theriological Congress to be held June 1974 in Moscow, there will be a symposium on forecasting rodent outbreaks. The symposium is organized by Dr. Polyakov, a representative of the Russian Organizing Committee, and myself, as a representative of the EPPO Working Group. This symposium offers a unique opportunity for a general view of the work done in the USSR during the past 30 years, as well as of the present stage of work accomplished in Europe. A compilation of the directory of institutions and scientists involved in applied rodent research is also under preparation.

RODENTICIDE PANEL: STANDARD METHODS FOR RODENTICIDE TESTS

At the very beginning it was thought that the development of standard methods for rodenticide tests would also be included in the objectives of the Working Group on Field Rodents. Later it was thought to be more convenient to establish a separate Rodenticide Panel, parallel to the already existing Insecticide and Fungicide Panels headed by the Working Party on Pesticides in Plant Protection.

This Rodenticide Panel has had several meetings and outlined a first draft of recommended methods: "Proposal for the Use of Standard Methods in Rodenticide Tests"[7]. In Spring 1973 this proposal was distributed for comments to the EPPO member countries. Up to now we have received a number of comments, and some proposals for amendments, and the second draft will be prepared before the next meeting at the end of October. Since some other international organizations, like FAO and the World Health Organization, have also

shown interest in our approach, the draft has also been sent for comments to persons recommended by these organizations. It is extremely useful for me, and consequently for the reshaping of our guidelines, to now have contacts with American research workers who are making similar efforts through the American Society for Testing and Materials (ASTM), Vertebrate Control Agents (E-35.17).

In this connection it does not seem to be relevant to discuss our draft in detail. It might be briefly mentioned that we have included, e.g., screening tests for new candidate rodenticides, toxicity and palatability tests for new formulations of known poisons, field tests separately for Rattus norvegicus, Mus musculus, and for the most important microtine rodents. Some examples of further statistical procedures for the evaluation of the efficacy are included. However, the panel has neither retained the idea of including detailed technical instructions for the preparation of formulations or baits nor has it established rigid rules on how to use specific rodenticides. Due to the divergence of legislation in member countries, the threshold limits for the approval of certain rodenticidal preparations and the appreciation of toxicological risks, including environmental aspects, remain outside the primary scope of the Panel's activity.

It soon became apparent after the draft was circulated that some proposed methods were not entirely satisfactory. The lack of basic knowledge on the behaviour of subterranean rodents inevitably resulted in vague recommendations for assessing the population densities of these rodent species. For Microtus arvalis, the common test and most important of the field rodents, several extremely divergent methods are already established in various countries, and proposal for a standard method may well result in heavy criticism according to the comments received. The only solution I can presently see consists in a simultaneous experimentation to compare the advantages and weaknesses of the most widely used methods. The practical implementation of such a series of experiments is of common interest for both the Rodenticide Panel and the Working Group on Field Rodents; provisions towards this end have been made.

There has been some discussion on including tests for repellents in our guidelines. The Scandinavians were entrusted with this task, but so far no general agreement has been found on the general conditions and outlines of the tests. Probably some cues could be obtained from the work done in the USA, e.g., by the Denver Wildlife Research Center.

WORKING PARTY ON MUSKRAT PROBLEMS

The review of the activities of EPPO on rodent problems would be incomplete without mentioning the third group, the Working Party on Muskrat Problems, headed by Dr. Giban[8]. The muskrat that was introduced from America is now widely spread in Europe. In Central Europe it is causing considerable damage to ditches, canals, river banks, and roadsides, while in some North European countries, as in Finland, it is considered as one of the most important fur-bearing animals. The activities of this group have been concentrated on coordination of control measures and in preventing the spreading of the species. The Working Group on Field Rodents recently recommended that the Working Party on the Muskrat should also include the coypu (Myocastor) in its program of studies.

CONCLUSION

As it appears from the preceeding, the role of EPPO in international rodent research is predominantly coordinative and mainly concentrated on internal problems of the member countries. Centralized research programs are conducted only occasionally. The Muskrat Group has had a few such projects, and the Working Group on Field Rodents is planning one on surveillance methods.

This does not mean, however, that EPPO activities should be restricted. On the contrary, intensified and coordinated efforts by the EPPO countries, with their economic resources and research capacity, can be instrumental for producing a "bank of know how," which could be utilized, e.g., by such international organizations as FAO and WHO, which have focused their activities predominantly in developing countries. Also, a minority of EPPO member countries belong to the latter category, and it appears that there is an interest from other such countries in joining EPPO.

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